

What is claimed is:

1. A method for monitoring a light path between a source node and a destination node in an Optical Communication Network (OCN) using a Command Line Interface (CLI), the method comprising the steps of:

executing a procedure called Trace for tracing an existing light path between the source node and the destination node in the OCN;

executing a procedure called Walk for identifying a potential light path between the source node and the destination node in the OCN;

executing a procedure called Global Discovery for identifying the nodes that are traversed by the light path existing between the source node and the destination node in the OCN; and

executing a procedure called Local Discovery for identifying the nodes that are traversed by the light path existing between the source node and the destination node in the OCN;

wherein the light path to be monitored includes a start node where monitoring is invoked through the CLI.

2. A method as claimed in claim 1, wherein the step of executing the procedure called Trace comprises the steps of:

constructing lists of nodes that are on the light path to be monitored; and displaying said lists of nodes.

3. A method as claimed in claim 2, wherein the step of constructing the lists of nodes, comprises the steps of:

constructing a list of nodes that are traversed in sequence by the light path from the start node to the source node as RESULT\_LIST1; and

constructing the list of nodes that are traversed in sequence by the light path from the start node to the destination node as RESULT\_LIST2.

4. A method as claimed in claim 3, wherein the step of constructing  
RESULT\_LIST1 comprises the step of identifying all nodes pre-provisioned to be on  
the light path that have detected and processed a wavekey corresponding to the  
light path wherein the wavekey is a signature that uniquely identifies the light path.

5. A method as claimed in claim 3, wherein the step of constructing  
RESULT\_LIST2, comprises the step of identifying all nodes pre-provisioned to be on  
the light path that have detected and processed the wavekey corresponding to the  
light path wherein the wavekey is a signature that uniquely identifies a light path.

6. A method as claimed in claim 3, wherein the step of displaying list of nodes  
comprises the step of displaying RESULT\_LIST1 and RESULT\_LIST2.

7. A method as claimed in claim 1, wherein the procedure called Walk  
comprises the steps of:

constructing lists of nodes that are provisioned with expected wavekey  
to be present on the light path to be monitored; and  
displaying said lists of nodes.

8. A method as claimed in claim 7, wherein the step of constructing lists of  
nodes that are provisioned with expected wavekey to be present on the lightpath to  
be monitored comprises the steps of:

constructing the list of nodes that are provisioned to be present with  
expected wavekey on the light path from the start node to the source node as  
RESULT\_LIST1; and

constructing the list of nodes that are provisioned to be present on the  
light path from the start node to the destination node as RESULT\_LIST2.

9. A method as claimed in claim 8, wherein the step of constructing  
RESULT\_LIST1 comprises the step of identifying nodes that are provisioned to

process the expected wavekey corresponding to the light path, wherein the wavekey is a signature that uniquely identifies the light path.

10. A method as claimed in claim 8, wherein the step constructing  
5 RESULT\_LIST2 comprises the step of identifying nodes that are provisioned to process the expected wavekey corresponding to the light path, wherein the wavekey is a signature that uniquely identifies the light path.

11. A method as claimed in claim 7, wherein the step of displaying the lists of  
10 nodes comprises the step of displaying RESULT\_LIST1 and RESULT\_LIST2.

12. A method as claimed in claim 1, wherein the procedure called Global  
Discovery comprises the steps of:  
flooding the OCN; and  
15 displaying a list of nodes traversed by the light path.

13. A method as claimed in claim 12, wherein the step of flooding the OCN  
comprises the steps of:  
retrieving the list of all optical nodes in the OCN from the CN (Control  
20 Network) topology information; and  
sending messages to all the optical nodes enquiring whether they have  
processed the wavekey corresponding to the light path; and  
requesting all the nodes that have detected the wavekey to reply back  
to the start node with an affirmative acknowledgement.

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14. A method as claimed in claim 1, wherein the procedure called Local  
Discovery comprises the steps of:  
constructing lists of optical nodes detected via local neighbour  
discovery; and  
30 displaying a list of nodes traversed by the light path.

15. A method as claimed in claim 14, wherein the step of constructing lists of optical nodes detected via local neighbour discovery comprises the steps of:

5 sending messages to all neighbouring nodes discovered via the CN (Control Network) topology information enquiring whether they have processed the wavekey corresponding to the light path; and  
requesting all the nodes that have detected and processed the wavekey to request their neighbouring nodes (discovered via the CN topology information) to reply back to the start node if they have processed the wavekey.

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16. A system for monitoring a light path between a source node and a destination node in an Optical Communication Network (OCN) using a Command Line Interface (CLI), the system comprising:

15 means for executing a procedure called Trace for tracing an existing light path between the source node and the destination node in the OCN;  
means for executing a procedure called Walk for identifying a potential light path between the source node and the destination node in the OCN; and  
means for executing a procedure called Global Discovery for identifying the nodes that are traversed by the light path existing between the  
20 source node and the destination node in the OCN; and  
means for executing a procedure called Local Discovery for identifying the nodes that are traversed by the light path existing between the source node and the destination node in the OCN;

25 wherein the light path to be monitored includes a start node where monitoring is invoked through the CLI.

17. A system as claimed in claim 16, wherein the means for executing the procedure called Trace comprises:

30 means for constructing lists of nodes that are on the light path to be monitored; and  
means for displaying said lists of nodes.

18. A system as claimed in claim 17, wherein the means for constructing the lists of nodes comprises:

5 means for constructing a list of nodes that are traversed in sequence by the light path from the start node to the source node, as RESULT\_LIST1; and

means for constructing the list of nodes that are traversed in sequence by the light path from the start node to the destination node, as RESULT\_LIST2.

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19. A system as claimed in claim 18, wherein the means for constructing RESULT\_LIST1 comprises:

15 means for identifying all nodes that have processed a wavekey corresponding to the light path, wherein the wavekey is a signature that uniquely identifies the light path.

20. A system as claimed in claim 18, wherein the step of constructing RESULT\_LIST2 comprises:

20 means for identifying all nodes that have used the wavekey corresponding to the light path, wherein the wavekey is a signature that uniquely identifies a light path.

21. A system as claimed in claim 17, wherein the means for displaying the list of nodes comprises means for displaying RESULT\_LIST1 and RESULT\_LIST2.

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22. A system as claimed in claim 16, wherein the means for executing the procedure called Walk comprises:

30 means for constructing lists of nodes that are provisioned with expected wavekey to be present on the light path to be monitored; and means for displaying said lists of nodes.

23. A system as claimed in claim 22, wherein the means for constructing lists of nodes that are provisioned with expected wavekey to be present on the light path to be monitored comprises:

5 means for constructing the list of nodes that are provisioned with expected wavekey to be present on the light path from the start node to the source node as RESULT\_LIST1; and

means for constructing the list of nodes that are provisioned with expected wave key to be present on the light path from the start node to the destination node as RESULT\_LIST2.

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24. A system as claimed in claim 23, wherein the means for constructing RESULT\_LIST1 comprises:

15 means for identifying nodes that are provisioned with expected wavekey to process the wavekey corresponding to the light path, wherein the wavekey is a signature that uniquely identifies the light path.

25. A system as claimed in claim 23, wherein the means for constructing RESULT\_LIST2 comprises:

20 means for identifying nodes that are provisioned with expected wavekey to process the wavekey corresponding to the light path; wherein the wavekey is a signature that uniquely identifies the light path.

26. A system as claimed in claim 16, wherein the means for executing the procedure called Global Discovery comprises:

25 means for flooding the OCN; and means for displaying a list of nodes traversed by the light path.

27. A system as claimed in claim 26, wherein the means for flooding of the OCN comprises:

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means for retrieving the list of all optical nodes in the OCN from the CN (Control Network) topology information; and

means for sending messages to all the optical nodes enquiring whether they have processed the wavekey corresponding to the light path; and

means for requesting all the nodes that have detected the wavekey to reply back to the start node with an affirmative acknowledgement.

28. A system as claimed in claim 16, wherein the means for executing the procedure called Local Discovery comprises:

means for constructing lists of optical nodes detected via local neighbour discovery; and

means for displaying a list of nodes traversed by the light path.

29. A system as claimed in claim 28, wherein the means for constructing lists of optical nodes detected via local neighbour discovery comprises:

means for sending messages to all neighbouring nodes discovered via the CN (Control Network) topology enquiring whether they have detected and processed the wavekey corresponding to the light path; and

means for requesting all the nodes that have detected and processed the wavekey to request their neighbouring nodes (discovered via the CN topology information) to reply back to the start node if they have processed the wavekey.